Manitoba
Energy and Mines
Geological Services

Open File Report OF85-1

Radiometric Survey of Southeastern Manitoba

By D.M. Watson

Winnipeg, 1985

Energy and Mines

Hon. Wilson D. Parasiuk
Minister

Dick Chenier
Deputy Minister

Geological Services
W. David McRitchie
Director

RADIOMETRIC SURVEY - SOUTHEASTERN MANITOBA

This report covers an area of southeastern Manitoba bounded by the Ontario border, the Trans-Canada Highway, Highway 59, and the Pine Falls-Bissett-Bird River road (Provincial Roads or PR's 304, 314 and 315).

This area is underlain by a variety of rock types that could contain concentrations of uranium- and thorium-bearing minerals. At the request of the Water Standards Section of the Manitoba Department of Environment and Workplace Safety and Health, the roads within the study area were traversed to determine whether or not anomalous areas could be detected, and also whether areas of possible groundwater contamination could be delineated.

The survey was conducted using a roof-mounted detector, and a continuous recorder. Anomalous readings were checked to determine whether or not there was an obvious (potential) source of radioactivity. No large areas of greater than background radioactivity were found, and all small anomalies could be correlated with roadside outcrops.

METHOD

The system consisted of a 1.8 litre sensor (Scintrex model GSA-61) with a single channel analogue recorder.

All routes covered were driven with the spectrometer operating in the total count mode, in addition some of the roads were covered a second time with the spectrometer set to measure equivalent uranium. The method and equipment were the same as that used by Soonawala (1979).

No attempt has been made to convert the counts to equivalent uranium or thorium. because of the absence of a suitable calibration method or area for this instrument and configuration, In addition, it should be noted that this instrument measures radioactivity of uranium and thorium daughter products, not the elements themselves. In a system where uranium and its daughter elements are subject to dissolution and transport by surface waters, the occurrence of an anomaly may or may not correspond to an occurrence of uranium in the soil/rock at that location.

RESULTS

The data collected in this study are presented as a series of chart recordings along with an index map showing the routes driven. Numbers on the charts may be compared with those on the map to determine where the readings were taken.

The following notes are presented to assist in the interpretation of these charts.

FIGURE 1

Ref. No.	Comments
1	From Hwy. 59 travelling east on Hwy. 44
25 - 27	PR. 312 from Hwy. 44 to Ingolf, Ontario
27 - 29	Ingolf - return to Hwy. 44
29	Caddy Lake Turn: TC = 8900 and 9200 counts per 10 second period. U = 30 counts
29 - 33	Hwy. 44 east to TCH
33 - 34	TCH east to Ontario Border
34	Ontario Border west on TCH
35.5	U counts = 100, TC = 7213 corresponds to large outcrop of Falcon Lake stock
38	Ste. Anne, TC = 310, U = 1
- - -

FIGURE 2

Ref. No.	Comments
52	Hwy. 11 east
57	Jct. Hwy. 11 and P.R. 211; east on 211
58	Jct. on Whiteshell Establishment road
59	U-turn at Whiteshell Establishment
60	East on P.R. 211 to Pinawa
62	Pinawa; stop recording
63	Hwy. 11 south from P.R. 211
64	East on P.R. 307 from Hwy. 11
70 - 72	P.R. 309 north from 307 to Big Whiteshell Lake
73	East on P.R. 307 from P.R. 309
77	Jct. P.R. 307 and Hwy. 44; east on Hwy. 44
82	West on TCH from Hwy. 44

- -

FIGURE 3

Ref. No.	Comments
82-85	Total count mode from Hwy. 15 at Nourse north to St. Ouens
85a - 89a	Hwy. 15 at 101 East, total count mode
86 - 90	P.R. 317 east from Hwy. 59 to Hwy. 11
91	P.R. 502 east from Lac du Bonnet

FIGURE 4

92 - 101	P.R. 313 east to Eight Foot Falls campground
101 - 108	Pointe du Bois west on P.R. 313 to junction with P.R. 315
109 - 112	South of gravel road past AECL underground test site
112 - 115	North on gravel road past AECL underground test site

116 - 124 125	P.R. 433 from P.R. 313 at Lee River to P.R. 313 west on P.R. 313 to P.R. 317
126 - 130	North on P.R. 317 to 1 section road; west to Greenwald
131	From Powerview, north on P.R. 304
132	East on Cat Lake access road
134 - 137 139	North on P.R. 314 - Bissett Manigotagan
140 - 146	P.R. 304 east from Manigotagan to Bird Lake (P.R. 315).
146 - 147	P.R. 315 east to Ontario Border
147 - 148	P.R. 315 south from Ontario Border to P.R. 313

CONCLUSIONS

An examination of Figures 1 to 5 reveals only a few areas of anomalous responses. Those anomalies that are present are narrow and not much higher than background. In some cases these anomalies are directly related to outcrop exposure (variation in overburden thickness) and in other cases they can

be correlated to outcrops of pegmatitic material. In either case, however, the area of high radioactivity is small and does not warrant further investigation.

REFERENCE

Soonawala, N.M.
1979: Geophysical Investigations; in Manitoba Mineral Resources Division, Report of Field Activities, 1979, p. 55-67.